A.I.A. FILE NO. 10-B

GLAZED AND UNGLAZED STRUCTURAL FACING TILE

SPECIFICATIONS

SEPTEMBER 1, 1957

FACING TILE INSTITUTE

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A.I.A. FILE NO. 10-B

DIRT-RESISTANT MORTARS

(Non-Staining)

In contrast to the non-staining characteristics of glazed facing tile, the mortar joints are normally far less resistant to soiling and discoloration because of greater permeability to water and any dirt which might be carried by it into the pores of the mortar. The permeability of the mortar and its tendency to absorb such staining materials can be significantly decreased and its washability increased in several ways. The following recommendations are taken from a memorandum of the Structural Clay Products Research Foundation dated October 30, 1956, "The Development of an Impermeable, Non-Staining Mortar".

1. Continuation of a practice currently used in raking out the construction mortar, before final set, to a depth of approximately 3/8 inch and repointing with a mortar of the composition, by volume, of 1 cement, 1/8 lime and 2 graded, fine (80 mesh) sand. To this mortar add aluminum tristearate, calcium stearate or ammonium stearate in the amount of 2% of the weight of the cement.

2. Where significant but not necessarily maximum dirt resistance is required, add either aluminum tristearate, calcium stearate or ammonium stearate to the mortar of construction in the amount of 3% of the weight of the cement.

SPECIFICATIONS
FOR GLAZED AND UNGLAZED STRUCTURAL FACING TILE

Revised September 1, 1957

Adopted by

FACING TILE INSTITUTE

affiliated with

Structural Clay Products Institute

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FOR SELECT QUALITY CERAMIC GLAZE STRUCTURAL FACING TILE

1. WORKMANSHIP

The body of all units shall be of clear burning, deaired fire clay burned as straight and true as careful manufacture can produce. The finished face or faces of all units that will be exposed when in place shall be covered with a ceramic glaze, compounded of metallic oxides, chemicals and clays thoroughly ground together and sprayed upon a previously formed body. The units shall then be burned at high temperature, fusing the glaze to the body, making them inseparable.

2. SIZES AND SHAPES

The face sizes of ceramic color, clear and speckled glaze units and fittings therefor shall be as specified.

3. UNIT DESIGN

All ceramic color, clear and speckled glaze units shall conform to the requirements of Sections 1 to 5, inclusive, of the Physical Requirements of the Facing Tile Institute, as to number of cells, shell and web thickness, scoring and coring.

4. SELECT QUALITY

Select Quality, ceramic color, clear and speckled glaze units are designed for use with ¼-inch mortar joints. Select Quality, "8W" series (7¾ x 15¾ inch face size), are furnished ground edge only.

TABLE I

Permissible Variations in Face Dimensions

Standard Face Dimension (Height, Length, Return or Reveal)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot *
	If Larger	If Smaller	
Inches	Inch	Inch	Inch
2-3/8	1/16	3/32	3/32
3-3/4	1/16	3/32	3/32
5-1/16	1/16	4/32	4/32
7-3/4	1/16	5/32	6/32
11-3/4	1/16	7/32	8/32
	Ground edge or gaged units only		
5	1/16	1/16	3/32
7-3/4	1/16	1/16	3/32
11-11/16	1/16	1/16	3/32
15-3/4	1/16	1/16	3/32

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.

2. Permissible variations for units having dimensions more than ¼ inch greater than shown in Table I shall be the same as for the next larger dimension.

(a) Face Dimension Tolerances. The total variation in the finished face dimensions of units shall be not more than the amounts shown in Table I.

(b) Bed Depth Dimension Tolerances. The total variation in the bed depth (through the wall) dimension of units shall be not more than the amounts shown in Table II.

TABLE II

Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot *
	If Larger	If Smaller	
Inches	Inch	Inch	Inch
1-3/4	1/8	2/16	2/16
3¾—two face	1/8	2/16	2/16
3-3/4	1/8	3/16	3/16
5-3/4	1/8	4/16	4/16
7-3/4	1/8	5/16	5/16

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.
2. Permissible variations for units having dimensions more than ¼ inch greater than shown in Table II shall be the same as for the next larger dimension.
3. No bed depth greater than 3¾ inches is made in trim shades or two-faced units of Ceramic Color, Clear or Speckled Glaze.
4. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

(c) Distortion Tolerances. The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line respectively shall not exceed the amounts shown in Table III.

TABLE III

Permissible Distortion

Standard Face Dimensions (Height and Length) In Inches	Maximum Permissible Distortion In Inches
2-3/8 x 7-3/4	2/32
5-1/16 x 7-3/4	2/32
5-1/16 x 11-3/4	3/32
3-3/4 x 11-3/4	3/32
7-3/4 x 15-3/4	3/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.
2. Distortion tolerances for units having dimensions more than ¼ inch greater than shown in Table III shall be the same as for the next larger dimension.

(d) Finish. The glaze shall be free from chips, crazes, blisters, crawling or other imperfections detracting from the appearance

of the finished wall when viewed at a distance of 5 feet at right angles from the wall.

(e) ***Tests of Finish.*** Unit faces shall pass the standard tests of the Facing Tile Institute or of the American Society for Testing Materials (Designation C126—) for Imperviousness, Chemical Resistance of Finish and Resistance to Crazing (Autoclave Test).

(f) ***Color and Texture.*** The textures shall be mottled, or smooth, and the color of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade and texture. For colors see page 20.

(g) ***Compressive Strength.*** The compressive strength of units in pounds per square inch based upon gross area shall be not less than the amounts shown in Table IV.

TABLE IV

Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

5. SUPPLEMENTARY REQUIREMENTS

(a) ***Opacity.*** Where opacity of finish is desired, and opaque glazes are specified, they shall not show the color of the body, nor visible stain from the opacity test.

FOR B QUALITY CERAMIC GLAZE STRUCTURAL FACING TILE

(a) ***Dimension and Distortion Tolerances.*** B Quality, Ceramic Glaze units may have greater variation than permitted for Select Quality.

(b) ***Finish.*** The glaze shall be free from large chips, crazes or blisters, but this quality may contain units having small chips and slight mechanical or glaze imperfections.

(c) ***Tests of Finish.*** Many of the units furnished as B Quality will pass the tests for finish required of Select Quality. However, failure to pass these tests cannot be cause for rejection as all units may not meet the test requirements.

(d) ***Color and Texture.*** The textures shall be mottled, or smooth, and the color of the finished surface shall be indicated by a sample consisting of not less than 3 stretcher units. However, the shade range in the B Quality may be wider than the range represented by the sample. For colors see page 20.

FOR STANDARD QUALITY CERAMIC GLAZE STRUCTURAL FACING TILE

1. SCOPE

These specifications cover Standard Quality, Ceramic Glaze structural facing tile, manufactured by members of the Facing Tile Institute as a production line item to conform with specifications for this material. Two specific types are covered as follows:

Type CL—Ceramic Clear Glaze Facing Tile: Designates units with smooth face or faces that will be exposed when in place covered with a translucent or cream, buff or light gray tinted glaze with a semi-gloss to glossy finish.

Type SP—Ceramic Speckled Glaze Facing Tile: Designates units with a smooth face or faces that will be exposed when in place covered with a satin matt or semi-gloss speckled glaze finish, in neutral background colors ranging from cream to buff or off-white to light gray.

2. WORKMANSHIP

The body of all units shall be clear burning, deaired fire clay burned as straight and true as careful manufacture can produce. The applied glazes shall be compounded of metallic oxides, chemicals and clays thoroughly ground together and sprayed upon a previously formed body. The units shall then be burned at high temperatures, fusing the glaze to the body, making them inseparable.

3. SIZES AND SHAPES

The sizes of Standard Quality ceramic glaze units and fittings shall be "4D" or "6T".

4. UNIT DESIGN

All Standard Quality ceramic glaze units shall conform to the requirements of the Facing Tile Institute as to number of cells, shell and web thickness, scoring and coring.

5. COLOR AND TEXTURE

The texture, color and finish of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade.

6. TESTS OF FINISH

Unit faces shall pass the standard tests of the Facing Tile Institute or of the American Society for Testing Materials (Designation C126—) for Imperviousness, Chemical Resistance of Finish, and Resistance to Crazing (Autoclave Test).

7. COMPRESSIVE STRENGTH

The compressive strength of units in pounds per square inch based upon gross area shall be not less than the amount shown in Table 1.

TABLE 1

Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

8. BED DEPTH DIMENSION TOLERANCES

The total variation in the bed depth (through the wall) dimension of units shall be not more than the amount shown in Table 2.

TABLE 2

Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension	
	If Larger	If Smaller
Inches	Inch	Inch
1-3/4	1/8	2/16
*3-3/4—two face	1/8	2/16
3-3/4	1/8	3/16
5-3/4	1/8	4/16
7-3/4	1/8	5/16

* The difference in thickness between largest and smallest two-face units in one lot shall not exceed 1/8 inch. Size of lot shall be determined by agreement between the purchaser and seller.

NOTE 1. No bed depth greater than 3¾ inches is made in two-face units.

2. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

9. DISTORTION TOLERANCES

The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line, respectively, shall not exceed the values shown in Table 3.

TABLE 3

Permissible Distortion

Standard Face Dimensions (Height and Length)	Maximum Permissible Distortion
In Inches	In Inches
5-1/16 x 7-3/4	2/32
5-1/16 x 11-3/4	3/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.

10. FACE DIMENSION TOLERANCES

The total variation in the finished face dimensions of the units shall be not more than the amount shown in Table 4. Standard Quality ceramic glaze units are not furnished with ground edges nor gaged to closer tolerances than shown in Table 4.

TABLE 4

Permissible Variations in Face Dimensions

Standard Face Dimension (Height, Length, Return or Reveal)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
	If Larger	If Smaller	
Inches	Inch	Inch	Inch
5-1/16	3/32	5/32	5/32
7-3/4	3/32	6/32	6/32
11-3/4	3/32	8/32	8/32

* Size of lot shall be determined by agreement between the purchaser and the seller.

11. FINISH

The glaze shall be free from chips, crazes, blisters, crawling or other imperfections detracting from the appearance of the finished wall when viewed at a distance of 5 feet at right angles from the wall except that not more than 15 per cent of the units may have slight mechanical or glaze imperfections and small chips.

FOR SALT GLAZE STRUCTURAL FACING TILE

1. SCOPE

These specifications cover Select Quality, salt glaze structural facing tile.

2. WORKMANSHIP

The body of all units shall be clear burning, deaired fire clay burned as straight and true as careful manufacture can produce. The finished face or faces of all units that will be exposed when in place shall be covered with a glaze having a lustrous finish produced by salt and chemicals applied to a previously formed body as vapor during burning and matured and fused to the body at high temperatures.

3. SIZES AND SHAPES

The sizes of salt glaze units and fittings shall be "4S", "4D" or "6T".

4. UNIT DESIGN

All salt glaze units shall conform to the requirements of the Facing Tile Institute as to number of cells, shell and web thickness, scoring and coring.

5. COLOR AND TEXTURE

The texture, color and finish of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade.

6. COMPRESSIVE STRENGTH

The compressive strength of units in pounds per square inch based upon gross area shall be not less than the amount shown in Table 1.

TABLE 1

Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

7. BED DEPTH DIMENSION TOLERANCES

The total variation in the bed depth (through the wall) dimension of units shall be not more than the amount shown in Table 2.

TABLE 2

Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension	
	If Larger	If Smaller
Inches	Inch	Inch
1-3/4	1/8	2/16
*3-3/4—two face	1/8	2/16
3-3/4	1/8	3/16
5-3/4	1/8	4/16
7-3/4	1/8	5/16

* The difference in thickness between largest and smallest two-face units in one lot shall not exceed 1/8 inch. Size of lot shall be determined by agreement between the purchaser and seller.

NOTE 1. No bed depth greater than 3¾ inches is made in two-face units.

2. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

8. DISTORTION TOLERANCES

The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line, respectively, shall not exceed the values shown in Table 3.

TABLE 3

Permissible Distortion

Standard Face Dimensions (Height and Length)	Maximum Permissible Distortion
In Inches	In Inches
5-1/16 x 7-3/4	2/32
5-1/16 x 11-3/4	3/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.

9. FACE DIMENSION TOLERANCES

The total variation in the finished face dimensions of the units shall be not more than the amount shown in Table 4. Salt glaze units are not furnished with ground edges nor gaged to closer tolerances than shown in Table 4.

TABLE 4

Permissible Variations in Face Dimensions

Standard Face Dimension (Height, Length, Return or Reveal)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
	If Larger	If Smaller	
Inches	Inch	Inch	Inch
5-1/16	3/32	5/32	5/32
7-3/4	3/32	6/32	6/32
11-3/4	3/32	8/32	8/32

* Size of lot shall be determined by agreement between the purchaser and the seller.

10. FINISH

The glaze shall be free from chips, blisters, crawling or other imperfections detracting from the appearance of the finished wall when viewed at a distance of 5 feet at right angles from the wall except that not more than 15 per cent of the units may have slight mechanical or glaze imperfections and small chips.

FOR SMOOTH UNGLAZED STRUCTURAL FACING TILE

Gray—Cream—Buff—Manganese Spot

1. WORKMANSHIP

The body of all units shall be of light burning, deaired fire clay burned as straight and true as careful manufacture can produce. The finished face or faces of all units that will be exposed when in place shall be unglazed with smooth finish and shall be hard burned to produce clear faces and semi-vitreous bodies.

2. SIZES AND SHAPES

The face sizes of unglazed units and fittings therefor shall be as specified.

3. UNIT DESIGN

All unglazed units shall conform to the requirements of Sections 1 to 5, inclusive, of the Physical Requirements of the Facing Tile Institute, as to number of cells, shell and web thickness, scoring and coring.

4. SELECT QUALITY

Select Quality, unglazed units are dimensioned for use with ¼-inch and ⅜-inch mortar joints.

(a) Face Dimension Tolerances. The total variation in the finished face dimensions of units shall be not more than the amounts shown in Table I.

TABLE I

Permissible Variations in Face Dimensions

Standard Face Dimension (Height, Length, Return or Reveal)		Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
Joint Width				
3/8-inch	¼-inch	If Larger Inch	If Smaller Inch	Inch
3-5/8	3-3/4	3/32	4/32	4/32
5	5-1/16	3/32	5/32	5/32
7-5/8	7-3/4	3/32	6/32	6/32
11-5/8	11-3/4	3/32	8/32	8/32

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.
2. Permissible variations for units having dimensions more than ⅜ inch greater than shown in Table I shall be the same as for the next larger dimension.

(b) Bed Depth Dimension Tolerances. The total variation in bed depth (through the wall) dimension of units shall be not more than the amounts shown in Table II.

TABLE II

Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)		Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
Joint Width 3/8-inch	¼-inch	If Larger Inch	If Smaller Inch	Inch
1-5/8	1-3/4	1/8	2/16	2/16
3-5/8	3-¾—two face	1/8	2/16	2/16
3-5/8	3-3/4	1/8	3/16	3/16
5-5/8	5-3/4	1/8	4/16	4/16
7-5/8	7-3/4	1/8	5/16	5/16

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.

2. Permissible variations for units having dimensions more than ⅜ inch greater than shown in Table II shall be the same as for the next larger dimension.

3. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

(c) Distortion Tolerances. The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line, respectively, shall not exceed the amounts shown in Table III.

TABLE III

Permissible Distortion

Standard Face Dimensions (Height and Length) in Inches Joint Width		Maximum Permissible Distortion In Inches
3/8 inch	¼-inch	
5 x 7-5/8	5-1/16 x 7-3/4	3/32
5 x 11-5/8	5-1/16 x 11-3/4	4/32
3-5/8 x 11-5/8	3-3/4 x 11-3/4	4/32
7-5/8 x 11-5/8	7-3/4 x 11-3/4	6/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.

2. Distortion tolerances for units having dimensions more than ⅜ inch greater than shown in Table III shall be the same as for the next larger dimension.

(d) Finish. The finished face or faces that will be exposed when in place shall be free from chips in excess of those permitted by Table IV and shall be free from other imperfections detracting from the appearance of the finished wall when viewed at a distance of 10 feet.

TABLE IV

Chippage in Inches

	Maximum Permissible Chippage, in Inches*
In from edge	1/8
In from corner	1/4

* Maximum permissible extent of chippage from the edges and corners of a unit into the surface of the stretcher and one header face. Not to exceed 5 per cent of any shipment may have chippage in excess of the allowance in Table IV, but not in excess of 3/16 inch and 5/16 inch from edge and corner, respectively.

*(e) **Color and Texture.*** The texture shall be smooth and the color of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade. For colors see page 20 of this specification.

*(f) **Compressive Strength.*** The compressive strength of units in pounds per square inch based upon gross area shall be not less than the amounts shown in Table V.

TABLE V

Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

*(g) **Absorption.*** The average absorption of 5 units by 24-hour submersion in cold water shall not exceed 5 per cent and the absorption of any single unit shall not exceed 7 per cent.

RECOMMENDED PACKING FOR STRUCTURAL FACING TILE

Glazed and Unglazed

1. The industry uses four standard methods of packing its products.

(a) Paper cartons or trays
(b) Loose in straw or hay
(c) Double cartons (packages)
(d) Wire bound boxes, crates or barrels

2. It is recommended that (a) packing be used for Select Quality Ceramic Glaze; Standard Quality Ceramic Glaze and Select Quality Salt Glaze, and that (a) or (b) packing be used for all other types and qualities.

3. Utmost care shall be taken in unloading and stacking facing tile on the job; if necessary to store outside, they shall be covered with a heavy tarpaulin. The units shall not be removed from the cartons until they are on the scaffold or at the position where needed.

PHYSICAL REQUIREMENTS FOR STRUCTURAL FACING TILE

Glazed and Unglazed

1. TYPE OF UNITS

Units may be multicored, hollow or uncored.

Solid masonry unit (multicored or uncored) is a masonry unit whose net cross-sectional area in every plane parallel to the bearing surface is 75 per cent or more of its gross cross-sectional area measured in the same plane.

Hollow masonry unit is a masonry unit whose net cross-sectional area in any plane parallel to the bearing surface is less than 75 per cent of its gross cross-sectional area measured in the same plane.

2. NUMBER OF CELLS

Requirements as to number of cells apply to hollow units only. Cells are hollow spaces enclosed within the perimeter of the exterior shells having a minimum dimension of not less than ½ inch and a cross-sectional area of not less than 1½ square inches.

Hollow units of 6-inch and 8-inch thickness shall have not less than 2 cells or rows of cells in the direction of wall thickness.

Double shell tile shall be considered as having one additional cell in the direction of wall thickness if either:

(a) The combined width of the voids between exterior and interior shells on both sides of the tile is not less than ½ inch and the combined thickness of the short webs between the inner and outer shells is not greater than that of the long transverse webs holding the inner shells, or

(b) The combined thickness of the inner and outer shells on each side of the tile is not less than 1 inch.

The face shells of single shell tile with multicored or solid face shells at least 1½ inches thick on both sides of the tile shall be considered as one additional cell in wall thickness, provided the volume of the cores in multicolored shells does not exceed 35 per cent of the gross volume of the face shell and the minimum distance from perimeter of core to either side of shell is not less than ⅜ inch.

3. SHELL AND WEB THICKNESS

(a) Multicored units. The minimum distance from the perimeter of core to the side (face) of multicored units shall be not less than ¾ inch.

(b) Hollow units. The average overall thickness of the shells, measured between the inner and extreme outer surfaces of vertical cell hollow units, shall be not less than ¾ inch. The thickness of the webs shall be not less than ½ inch.

The overall thickness of the side (face) shells, measured between the inner and extreme outer surfaces of horizontal cell hollow units, shall be not less than ¾ inch. The net thickness of the top and bottom shells shall be not less than ½ inch; that is, when the top and bottom shells are scored, the overall thickness of the top and bottom shells shall be not less than ½ inch plus the depth of the grooves. The thickness of the webs shall be not less than ½ inch.

4. SCORING

Unless otherwise specified by the purchaser, smooth or scored back glazed units or a mixture thereof may be furnished and smooth, combed or roughened back unglazed units or a mixture thereof may be furnished.

When scored, each groove shall be dovetailed and shall be not less than 1/16 inch nor more than ¼ inch in depth, and not more than 1 inch in width. The area covered by the grooves shall not exceed 50 per cent of the area of the scored faces.

When combed, the tile shall be scratched or scarified, prior to burning, by mechanical means which shall make scratches or scarifications on the surface of the tile not less than 1/16 inch nor more than ⅛ inch in depth, and not more than ¼ inch apart. When roughened, the die skin on the face of the tile shall be entirely broken by mechanical means, such as wire cutting or wire brushing. (The die skin may be observed within the cells of the tile.)

5. CORING

Type and direction of coring are optional with each manufacturer. Unless heavy units (priced in relation to excess weight and cost) are definitely required, maximum per cent of coring is fixed by the requirements of Sections 2 and 3. Heavy duty units may be either solid or cored not to exceed the maximum shown.

Standard Thickness Inches	Maximum Per Cent Coring
3¾	25
5¾	35
7¾	35

Per cent of coring shall be taken as the per cent of the gross volume of the unit removed by coring. Gross volume of the unit shall be determined to the outside of the scoring, but the material removed by scoring shall not be considered as part of the coring.

FIRE RESISTANCE PERIODS FOR VARIOUS TYPES OF CLAY MASONRY WALLS AND PARTITIONS

The standard fire test procedure to determine fire resistance periods for masonry construction is described in the "Standard Methods of Fire Tests of Building Construction and Materials", Designation ASA No. A2.1 of the American Standard Association, and adopted as standard by the American Society for Testing Materials, Designation E119—.

These specifications prescribe a fire endurance test which consists of exposing one side of the panel specimen to a standard high-intensity fire of controlled extent and severity. The performance is defined as the elapsed period before the first critical point in behavior is observed. This may be (1) the passage of flame or gas hot enough to ignite cotton waste during the fire endurance test, or (2) the passage of water during the hose stream test, or (3) the transmission of heat through the wall or partition during the fire endurance test shall not be such as to raise the temperature on its unexposed surface more than 250° F. above its initial temperature.

TABLE I

Load-Bearing Brick Faced Walls of Clay, or Shale, Structural Tile

Nominal Wall Thickness	Description	Ultimate Fire-Resistance Period	
		No Plaster	Plaster Inside
Inches		Hours	Hours
8	4-in. 40 per cent solid tile plus 4-in. brick face.	3-1/2	4
12	8-in. 40 per cent solid tile plus 4-in. brick face.	6	7
12	8-in. 70 per cent solid tile plus 4-in. brick face.	10 (a)	(a)

(a) Based on wall failure under load. If based on temperature rise, the ultimate fire resistance period would be 11 hours for the unplastered wall and 12 hours for the wall plastered on one side.

NOTE: Not less than 5/8-inch of 1:3 sanded gypsum plaster required to develop the above ratings for plastered walls.

TABLE II

Load-Bearing Walls of Clay, or Shale, Structural Tile

				Ultimate Fire Resistance Period				
				Incombustible Members Framed Into Wall or No Framed-in Members			Combustible Members Framed Into Wall	
Nominal Wall Thickness	Units in Wall Thickness	Cells in Wall Thickness	Minimum Percentage of Solid Materials In Units (a)	No Plaster	Plaster On One Side	Plaster On Two Sides	No Plaster	Plaster On Exposed Side
inches				hours	hours	hours	hours	hours
8	1	2	43	1-1/2	2	3	3/4	1-1/2
8	1	2	49	2	3	4	1-1/4	2
8	1	3 or 4	43	2	3	4	3/4	1-1/2
8	1	3 or 4	53	3	4	5	1-1/4	2
12	1	3	40	2-1/2	3-1/2	4	2	3
12	1	3	49	3-1/2	4	6	3	4
12	2	3 or 4	45	4	5	6	2-1/2	3-1/2
12	2	3 or 4	53	5	6	7	3	4

(a) The percentage of solid material units given above, in the case of walls built up of units of different designs, is to be taken as the weighted average for the units at the courses in the wall where the average percentage is the lowest.

NOTES: All tile is to conform with ASTM specifications from the standpoint of strength and absorption. Not less than ⅝-inch of 1:3 sanded gypsum plaster is required to develop the above ratings for plastered walls.

TABLE III

Structural Facing Tile Partitions

Nominal Wall Thickness, Inches	Description	Ultimate Fire Resistance
6	Glazed or unglazed facing tile cored not in excess of 25 per cent, 2 units in wall thickness.	3 hours
6	2 inches glazed or unglazed facing tile cored not in excess of 25 per cent and 4 inches structural tile cored not in excess of 40 per cent, plastered on unglazed side with ¾ inch gypsum sand plaster (1:3 by volume).	3 hours
6	2 inches glazed or unglazed facing tile cored not in excess of 25 per cent and 4 inches structural tile cored not in excess of 40 per cent, unplastered.	2 hours
4	Glazed or unglazed facing tile cored not in excess of 25 per cent, plastered on unglazed side with ¾ inch of gypsum sand plaster (1:3 by volume).	2 hours
4	Glazed or unglazed facing tile cored not in excess of 30 per cent, plastered on unglazed side with ¾ inch vermiculite plaster.	2 hours
4	Glazed or unglazed facing tile meeting requirements of ASTM Tentative Specifications for Ceramic Glazed Structural Clay Facing Tile, C126- and for Structural Clay Facing Tile, C212-, respectively, except that the shells of solid shell horizontal cell units shall be not less than ¾ inch thick, plastered on unglazed side with ¾ inch gypsum sand plaster (1:3 by volume).	1 hour

NOTE: All plastered partitions plastered on unexposed side.

Results of fire tests on structural tile walls and partitions and composite walls of brick and tile are reported in National Bureau of Standards Report BMS92, "Fire Resistance Classifications of Building Construction", October 1942, and reproduced in Tables I and II for various typical units. The fire resistance ratings listed in Table III are based upon standard fire tests conducted at Ohio State University.

METHODS OF TESTS FOR STRUCTURAL FACING TILE

Glazed and Unglazed

1. SAMPLING AND INSPECTION

For the imperviousness, chemical resistance, crazing, opacity, compression and absorption tests, at least ten units shall be selected by the purchaser or his authorized representative.

Ten stretcher units shall be tested for a lot of 10,000 units or fraction thereof; for larger lots, ten additional specimens may be tested for each 30,000 units or fraction thereof. When less than 1,000 units of any size are ordered no samples shall be required.

The purchaser or his authorized representative shall be accorded opportunity for sampling and inspecting units at the place of manufacture, prior to shipment. At least ten days from the time of sampling should be allowed for completion of the tests. The expense of the inspection and testing shall be borne by the purchaser.

2. IMPERVIOUSNESS TEST

Standard blue-black fountain pen ink shall be applied liberally to the glazed surface of five dry specimens and allowed to remain for five minutes. The surface shall then be washed with a wet cloth and running water, and examined at a distance of five feet for staining of the finish.

3. CHEMICAL RESISTANCE TEST

A portion of the glazed surface of two of the specimens shall be submerged in a 10 per cent solution of hydrochloric acid for three hours. Another portion of the glazed surface of the same specimens shall be submerged in a 10 per cent solution of potassium hydroxide for three hours. These solutions shall be maintained at a temperature of 60 to 80° F. (15 to 27° C.). The finishes shall then be rinsed, dried and examined for changes of texture and color.

4. CRAZING TEST

The crazing test shall be made on three whole dry units previously tested for imperviousness of finish. Specimens subjected to the chemical resistance test shall not be used.

The autoclave shall be of sufficient capacity to contain all the units of the same texture, color and size. The apparatus shall be equipped with a safety valve, blow-off valve, and pressure gauge whose accuracy is within 2 per cent of the scale range, and a heater of sufficient capacity to insure constant steam pressure within the autoclave.

The specimens shall be loosely placed above the water in the autoclave at room temperature. After fastening the autoclave head in place, the water in the bottom shall be heated from an external source. The blow-off valve shall be kept open until steam begins to escape, thereby expelling most of the air. After closing the blow-off valve the water shall be kept boiling and the steam pressure increased at a uniform rate until 150 pounds per square inch of pressure is reached within a period of not less than 60 minutes or exceeding one and one-half hours. Sufficient heat shall be applied to maintain a constant steam pressure of 150 pounds per square inch (plus or minus 5 pounds) for an additional hour.

The heater shall then be shut off and the steam pressure released slowly in not less than 30 minutes by opening the blow-off valve. The autoclave head shall be loosened, but not removed, and the specimens permitted to cool gradually to room temperature (not exceeding 120° F.) in a period not less than three hours. The specimens shall then be removed and standard blue-black fountain pen ink rubbed upon the glazed surfaces to aid in the detection and examination of failures.

5. OPACITY TEST

The opacity test shall be conducted on three dry specimens by applying standard blue-black fountain pen ink liberally to the body along a 2-inch length of the edge of the finished surface. After five minutes, the finish shall be examined for opacity.

When the same three specimens are to be subjected to the opacity and crazing tests, the opacity test shall be made first.

6. ABSORPTION TEST

The absorption test shall be made on five whole specimens or on five pieces containing not less than 16 square inches of glazed surface and of the thickness of the body, cut or sawed from five specimens. When the same specimens are to be subjected to the absorption and crazing tests, the absorption test shall be made first. The absorption test shall be made in accordance with the Standard Methods of Sampling and Testing Brick (A.S.T.M. Designation C67—) of the American Society for Testing Materials.

7. COMPRESSION TEST

Compression tests shall be made on five samples in accordance with the Standard Methods of Sampling and Testing Brick (A.S.T.M. Designation C67—) of the American Society for Testing Materials.

The same specimens used in the crazing test shall not be used in the compression test. When the same specimens are to be subjected to the absorption and compression tests, the specimens shall be dried to constant weight before subjecting them to the compression test.

FINISHES AND COLORS OF GLAZED AND UNGLAZED FACING TILE

CERAMIC COLOR GLAZE

Satin Finish

SINGLE COLOR FIELD SHADES

White
Light Gray
Ivory
Sunlight Yellow
Coral
Tan
Light Green
Ocular Green
Blue

*

MULTI-COLOR FIELD SHADES

White Mottle
Gray Mottle
Cream Mottle
Green Mottle

*

SINGLE COLOR TRIM SHADES

Black

CLEAR GLAZE

Gloss Finish

*

SPECKLED GLAZE

Speckled Finish

*

SALT GLAZE

Gloss Finish

COLOR

Cream Tone

*

UNGLAZED

Smooth Finish

COLORS

Light Gray
Cream
Light Buff
Golden Buff
Gray Manganese Spot
Cream Manganese Spot

Printed in USA

AVERY CLASSICS

SERIES AND SIZES

Series	Nominal (a) Face Size	Unit Face Size	Nominal Thickness
8 W (b)	8″ x 16″	7-3/4″ x 15-3/4″	2″, 4″
6 T	5-1/3″ x 12″	5-1/16″ x 11-3/4″	2″, 4″, 6″, 8″
4 D	5-1/3″ x 8″	5-1/16″ x 7-3/4″	2″, 4″, 6″, 8″
4 S	2-2/3″ x 8″	2-3/8″ x 7-3/4″	2″, 4″

(a) Nominal Dimensions include ¼″ as the thickness of the mortar joint.

(b) 8W Series furnished Ground or Gaged edge only.

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